

### REMARKS

Entry of the above amendments is respectfully requested. Claims 12 and 15 have been amended and claims 1-15, 25, 26 and 27-49 are pending in the application. Also, claims 50-52 have been added. In view of the present amendments and the below remarks, allowance of this application is believed to be in order and the same is respectfully requested.

Initially, Applicant would like to thank the Examiner for the early indication of allowable subject matter, including claims 2-11 and 13-14. Applicant has re-written claims 2, 11 and 13 in independent form, and presented them as new claims 50-52, respectively, to place these claims in condition for allowance. As such, these claims are believed to be in condition for formal allowance and the same is respectfully requested.

In addition, Applicant has amended claims 12 and 15 to overcome the section 112 rejections in the Office Action. In particular, claim 12 has been amended to make clear that the audible output may either be a pitch or a volume that is "varying" depending on the interaction between the probe and the sample. As a result, claim 12 clearly further limits claim 11, and thus is believed to be in condition for formal allowance. An indication to this effect is respectfully requested. (Note that claim 15 is addressed below.)

In addition, the Examiner rejected claims 1, 12, 15, and 26 under 35 U.S.C. § 102 as being anticipated by *Denneau, Jr.* U.S. Pat. No. 5,854,851. In doing so, the Examiner simply stated, "Note abstract." Applicant respectfully disagrees that *Denneau, Jr.* teaches the limitations of the rejected claims.

The present invention is directed to a probe microscope for sensing tip-sample interaction forces. More particularly, as tip-sample separation is modulated in a direction generally orthogonal to the sample surface, the preferred embodiment measures forces between the tip of a probe and the sample at a selected point. These forces cause the cantilever of the probe to

deflect. The magnitude of the forces as a function of sample position may then be plotted as a force curve or profile. With respect to claims 1, 15, 25 and 26, each of these claims includes a "manual input device" and an "alerting device". The manual input device, such as device 140 shown in Figure 7, is used to modulate the tip-sample separation manually, causing the tip of the probe to interact with the sample. The alerting device provides substantially real-time feedback to the operator in response to signals indicative of probe deflection.

*Denneau, Jr.* is directed to a method, and corresponding apparatus, for restoring and visually displaying missing data in a height map of a target surface being scanned by an optical profiler. More particularly, *Denneau, Jr.* teaches a method for correcting previously acquired "bad data" (see Abstract), the data having been acquired by an optical profiler. The preferred embodiment uses a manual input device to control interaction between a probe (a mechanical, not optical, imaging device) and a sample to make a force measurement (not condition previously acquired data).

In sum, *Denneau, Jr.* does not teach a manual input device that controls "a separation between the sample and said probe", as defined in rejected independent claims 1 and 25. Moreover, *Denneau, Jr.* does not teach an alerting device responsive to a probe motion signal that provides substantially real-time feedback to the operator, the feedback being "indicative of interaction between the sample and said probe." Therefore, rejected claims 1 and 25, and claims 15 and 26 dependent therefrom, respectively, are novel and non-obvious over the cited reference. Therefore, claims 1, 15, 25 and 26 are believed to be in condition for allowance and an indication to that effect is respectfully requested.

In addition, in paragraph 4 of the Office Action, the Examiner withdrew claims 27-49 from consideration as being directed to a non-elected invention. Applicant respectfully disagrees that previously added claims 27-49 are directed to a non-elected invention, and as such, believes that these claims should have been examined in the present application.

Claims 27-49 define a Z actuator as opposed to a “scanner”, as in the examined claims. However, the “scanner” of the examined claims necessarily includes a Z actuator as defined in claims 27-49. This is due to the fact that the present invention is directed to making force measurements between a probe and a sample at individual points by modulating tip/sample separation, i.e., by providing relative motion between the tip and sample in “Z.”

Although the term “scanner” may be used to refer to an actuator that provides motion in less than three directions, the scanner of the present invention necessarily includes an actuator that produces motion in “Z” because the invention is directed to making force measurements at a single point, as noted above. Therefore, the motion between the probe and the sample provided by the scanner must include providing motion in the Z direction. As a result, Applicant respectfully disagrees that the “original elected group does not require the use of a Z actuator as in claims 27-49” (Office Action, paragraph 4). Because the original elected group does require the use of a Z actuator, contrary to the Examiner’s contention, claims 27-49 should have been examined in the present application, and allowed for the reasons stated above. An indication to this effect is respectfully requested.

CONCLUSION

In view of the present amendments and above remarks, the Examiner's rejections are believed to be overcome. Overall, *Denneau, Jr.* does not teach manually controlling tip/sample separation by a manual input device, nor an alerting device that provides substantially real-time feedback to the operator. As a result, each of pending claims 1-15, 25, 26 and 27-49, as well as new claims 50-52, are in condition for allowance and an indication to that effect is respectfully requested.

Should the Examiner have any questions or comments that could expedite the completion of prosecution of this case, he is invited to contact the undersigned at the number below.

The Director is authorized to charge \$173.00 for the addition of two independent claims in excess of three. The Director is authorized to direct any additional fees associated with this or any other communication, or credit any overpayment, to Deposit Account 50-1170.

Respectfully submitted,

  
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